



# AIR PERMIT ROUTING/APPROVAL SLIP-Permits



AI No.	5565	Company	Williams Olefins LLC	Date Received	12/12/2011
Activity No.	PER20110004	Facility	Geismar Ethylene Plant	Permit Type	
CDS No.	0180-00029	Permit No.	PSD-LA-759	Expedited Permit	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no

1. Technical Review	Approved	Date rec'd	Date FW	Comments
Permit Writer	<i>Dan</i>		1/13/12	
Air Quality / Modeling	<i>ym</i>		2/14/12	
Toxics				
Technical Advisor	<i>BoT</i>		2/14/12	<i>as noted</i>
Supervisor				
Other				
2. Management Review (if PN req'd)	Approved	Date rec'd	Date FW	Comments
Supervisor				
Manager	<i>DVC</i>		1/17/12	
Assistant Secretary (PN)	<i>AS</i>		2/14/12	
3. Response to Comments (if PN req'd)	Approved	Date rec'd	Date FW	Comments
Supervisor				
Manager				
Administrator				
Legal (BFD)				
4. Final Approval	Approved	Date rec'd	Date FW	Comments
Supervisor				
Manager	<i>DVC</i>		4/17/12	<i>no comments</i>
Administrator	<i>AS</i>		4/11/12	
Assistant Secretary				

1. Technical Review					
PN of App needed	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no	Date of PN of App	12/22/11	Newspaper	<i>Gonzales Weekly Citizen</i>
Fee paid	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no				
NSPS applies	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no	PSD/NNSR applies	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no	NESHAP applies	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no

2. Post-Technical Review					
Company technical review	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no <input type="checkbox"/> n/a	E-mail date	12/25/11	Remarks received	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
Surveillance technical review	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no <input type="checkbox"/> n/a	E-mail date	12/25/11	Remarks received	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no

3. Public Notice					
Public Notice Required	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no	PSD			
Library					
PN newspaper 1/City	<i>The Advocate/Baton Rouge</i>	PN Date		EDMS Verification	<input type="checkbox"/> yes <input type="checkbox"/> no
PN newspaper 2/City		PN Date		EDMS Verification	<input type="checkbox"/> yes <input type="checkbox"/> no
Company notification letter sent	Date mailed	<i>PPG FEB 15 2012</i> <i>hm</i>			
EPA PN notification e-mail sent	Date e-mailed				
OES PN mailout	Date				

4. Final Review					
Public comments received	<input type="checkbox"/> yes <input type="checkbox"/> no	EPA comments rec'd	<input type="checkbox"/> yes <input type="checkbox"/> no	Date EPA Resp. to Comments-mailed	
Company comments received	<input type="checkbox"/> yes <input type="checkbox"/> no	PN info entered into Permit Sec VI	<input type="checkbox"/> yes <input type="checkbox"/> no	Date EPA approved permit	
Comments					

BOBBY JINDAL  
GOVERNOR -



PEGGY M. HATCH  
SECRETARY

State of Louisiana  
DEPARTMENT OF ENVIRONMENTAL QUALITY  
ENVIRONMENTAL SERVICES

Certified Mail No.: 7005 0390 0006 1029 1533

Agency Interest No. 5565  
Activity No.: PER20110004

Mr. Larry G. Bayer  
Williams Olefins, LLC  
Post Office Box 470  
Geismar, LA 70734

RE: Prevention of Significant Deterioration (PSD) permit, Geismar Ethylene Plant Expansion Project, Williams Olefins, LLC, Geismar, Ascension Parish, Louisiana

Dear Mr. Bayer:

Enclosed is the PSD permit for the Geismar Ethylene Plant Expansion Project. Construction of the proposed plant is not allowed until such time as the corresponding Part 70 operating permit is issued.

Please be advised that pursuant to provisions of the Environmental Quality Act and the Administrative Procedure Act, the Department may initiate review of a permit during its term. However, before it takes any action to modify, suspend or revoke a permit, the Department shall, in accordance with applicable statutes and regulations, notify the permittee by mail of the facts or operational conduct that warrant the intended action and provide the permittee with the opportunity to demonstrate compliance with all lawful requirements for the retention of the effective permit.

Should you have any questions concerning the permit, contact Dan Nguyen at 225-219-3395.

Sincerely,

A handwritten signature in cursive script, appearing to read "S. L. Phillips".

Sam L. Phillips  
Assistant Secretary

April 11, 2012  
Date

SLP: DCN

c: US EPA Region 6

PSD-LA-759

AI No. 5565

**AUTHORIZATION TO CONSTRUCT AND OPERATE A NEW OR MODIFIED  
FACILITY PURSUANT TO THE PREVENTION OF SIGNIFICANT DETERIORATION  
REGULATIONS IN LOUISIANA ENVIRONMENTAL REGULATORY CODE,  
LAC 33:III.509**

In accordance with the provisions of the Louisiana Environmental Regulatory Code, LAC 33:III.509,

Williams Olefins, LLC  
Post Office Box 470  
Geismar, LA 70734

is authorized to construct and operate the proposed Geismar Ethylene Plant Expansion Project at

5205 Highway 3115  
Geismar, Louisiana 70734

subject to the emissions limitations, monitoring requirements and other conditions set forth hereinafter.

This permit and authorization to construct shall expire at midnight on October 11, 2013, unless physical on site construction has begun by such date, or binding agreements or contractual obligations to undertake a program of construction of the source are entered into by such date.

Signed this 11th day of April, 2012.



Sam L. Phillips  
Assistant Secretary  
Office of Environmental Services

## **BRIEFING SHEET**

**GEISMAR ETHYLENE PLANT EXPANSION PROJECT  
AGENCY INTEREST NO. 5565  
WILLIAMS OLEFINS, LLC  
GEISMAR, ASCENSION PARISH, LOUISIANA  
PSD-LA-759**

### **PURPOSE**

To obtain a PSD permit for the proposed Geismar Ethylene Plant Expansion Project.

### **RECOMMENDATION**

Approval of the proposed PSD permit.

### **REVIEWING AGENCY**

Louisiana Department of Environmental Quality, Office of Environmental Services, Air Permits Division

### **PROJECT DESCRIPTION**

Geismar Ethylene Plant produces ethylene and other co-products by the thermal reaction of ethane and propane in thirteen cracking furnaces. Effluent gas from the furnaces is processed through a continuous integrated equipment train to refine and fractionate the mixed hydrocarbon stream into final products. Steam for the processes is supplied by four steam boilers.

Williams Olefins, LLC requests a permit modification to implement the Geismar Ethylene Plant Expansion Project which will increase annual ethylene production from 1.40 to 1.95 billion pounds. The proposed project will include the following:

1. Installing a) two new olefin cracking heaters (180 MM BTU/hr each), which will be equipped with Selective Catalytic Reduction (SCR); b) a new electric-driven booster compressor; c) a new electric-driven refrigeration compressor; c) two new cells (equipped with drift eliminators) to the existing six-cell cooling tower.
2. Modifying the existing amine acid gas treating unit.
3. Replacing the existing elevated Olefin Plant Flare system with a low profile multi-head system designed to accommodate the increased plant throughput.
4. Routing all atmospheric emergency Pressure Relief Valves (PRVs) into the proposed Olefin Plant Flare.
5. Incorporating the proposed fugitive components into the existing Leak Detection and Repair (LDAR) program.

## BRIEFING SHEET

**GEISMAR ETHYLENE PLANT EXPANSION PROJECT**  
**AGENCY INTEREST NO. 5565**  
**WILLIAMS OLEFINS, LLC**  
**GEISMAR, ASCENSION PARISH, LOUISIANA**  
**PSD-LA-759**

Emission in tons per year will be as follows:

Pollutant	Base Line Emissions	PTE	Baseline to Potential	PSD De Minimis	Netting Required
PM <sub>10</sub>	0.00	8.64	8.64	15	No
PM <sub>2.5</sub>	-	8.30	8.30	10	No
SO <sub>2</sub>	151.30	184.78	33.48	40	No
NO <sub>x</sub>	7.81	30.90	23.09	40	No
CO	42.47	116.0	73.53	100	No
VOC	5.21	29.18	23.97	40	No
CO <sub>2</sub> e	387,051	569,316	182,265	75,000	Yes

### TYPE OF REVIEW

PM<sub>10</sub>/PM<sub>2.5</sub>, SO<sub>2</sub>, NO<sub>x</sub>, CO and VOC emissions will not increase over the PSD significance levels. PSD review for these pollutants is not required. Greenhouse gas (GHG or CO<sub>2</sub>e) emissions from the proposed facility will increase more than the PSD significance level. A netting analysis is required. Creditable emissions reductions within the contemporaneous period do not provide enough credits to net GHGs out of PSD review. PSD review is required for GHG emissions from the proposed project.

### BEST AVAILABLE CONTROL TECHNOLOGY (BACT)

Williams Olefins will utilize 1) low-emitting feedstocks (ethane/propane); 2) energy efficient equipment (cracking heaters); 3) process design improvements (electric-driven booster compressor and replaced flare); and 4) lower-emitting and lower-carbon fuel (cracking heater off-gas with minimum of 25 volume percent of hydrogen as fuel (annual average)) as BACT for GHG emissions from the Geismar Ethylene Plant Expansion Project.

### AIR QUALITY IMPACT ANALYSIS

Prevention of Significant Deterioration (PSD) regulations require an analysis of existing air quality for those pollutants emitted in significant amounts from a proposed facility. GHG was the pollutant of interest for this facility. There are no National Ambient Air Quality Standard (NAAQS) or PSD increments established for GHG. Therefore, the air quality impact analysis, including screening modeling, a PSD increment analysis, and refined modeling do not apply.

## **BRIEFING SHEET**

**GEISMAR ETHYLENE PLANT EXPANSION PROJECT**  
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**PSD-LA-759**

### **ADDITIONAL IMPACTS**

Soils, vegetation, and visibility will not be adversely impacted by the proposed project, nor will any Class I area be affected. The project will not result in any significant secondary growth effects.

### **PROCESSING TIME**

Application Dated:	December 12, 2011
Additional Information Dated:	-
Effective Completeness:	January 13, 2012

### **PUBLIC NOTICE**

A notice requesting public comment on the permit was published in *The Advocate*, Baton Rouge, and in the *Gonzales Weekly Citizen*, Gonzales, on February 23, 2012; and was mailed to concerned citizens listed in the Office of Environmental Services Public Notice Mailing List. The permit application, the proposed permit, and the Statement of Basis were submitted to the Ascension Parish Library – Gonzales Branch. The proposed permit and the Statement of Basis were submitted to US EPA Region 6. No responses from the public were received during the comment period.

## **PRELIMINARY DETERMINATION SUMMARY**

### **GEISMAR ETHYLENE PLANT EXPANSION PROJECT**

**AGENCY INTEREST NO. 5565**

**WILLIAMS OLEFINS, LLC**

**GEISMAR, ASCENSION PARISH, LOUISIANA**

**PSD-LA-759, JANUARY 13, 2012**

#### **I. APPLICANT**

Williams Olefins, LLC  
Post Office Box 470  
Geismar, LA 70734

#### **II. LOCATION**

The Geismar Ethylene Plant is located at 5205 Highway 3115, Geismar, LA 70734. Approximate UTM coordinates are 687.60 kilometers East and 3,345.90 kilometers North, Zone 15.

#### **III. PROJECT DESCRIPTION**

Geismar Ethylene Plant produces ethylene and other co-products by the thermal reaction of ethane and propane in thirteen cracking furnaces. Effluent gas from the furnaces is processed through a continuous integrated equipment train to refine and fractionate the mixed hydrocarbon stream into final products. Steam for the processes is supplied by four steam boilers.

Williams Olefins, LLC requests a permit modification to implement the Geismar Ethylene Plant Expansion Project which will increase annual ethylene production from 1.40 to 1.95 billion pounds. The proposed project will include the following:

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### GEISMAR ETHYLENE PLANT EXPANSION PROJECT

AGENCY INTEREST NO. 5565

WILLIAMS OLEFINS, LLC

GEISMAR, ASCENSION PARISH, LOUISIANA

PSD-LA-759, JANUARY 13, 2012

Emission in tons per year will be as follows:

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NO <sub>x</sub>	7.81	30.90	23.09	40	No
CO	42.47	116.0	73.53	100	No
VOC	5.21	29.18	23.97	40	No
CO <sub>2</sub> e	387,051	569,316	182,265	75,000	Yes

#### IV. SOURCE IMPACT ANALYSIS

A proposed net increase in the emission rate of criteria pollutants and greenhouse gases above de minimis levels for new major stationary sources or major modifications of existing major stationary sources requires review under Prevention of Significant Deterioration regulations, LAC 33:III.509. PSD review entails the following analyses:

- A. A determination of the Best Available Control Technology (BACT);
- B. An analysis of the existing air quality and a determination of whether or not preconstruction or post-construction monitoring will be required;
- C. An analysis of the source's impact on total air quality to ensure compliance with the National Ambient Air Quality Standards (NAAQS);
- D. An analysis of the PSD increment consumption;
- E. An analysis of the source related growth impacts;
- F. An analysis of source related growth impacts on soils, vegetation, and visibility;
- G. A Class I Area impact analysis; and
- H. Toxic impacts

##### A. BEST AVAILABLE CONTROL TECHNOLOGY

Under current PSD regulations, an analysis of "top down" BACT is required for the control of each regulated pollutant emitted from a modified major source in excess of the specified significant emission rates. The top down approach to the BACT process involves determining the most stringent control technique available for a similar or identical source. If it can be shown that this level of control is infeasible based on technical, environmental, energy, and/or cost considerations, then it is rejected and the

## **PRELIMINARY DETERMINATION SUMMARY**

### **GEISMAR ETHYLENE PLANT EXPANSION PROJECT**

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**PSD-LA-759, JANUARY 13, 2012**

next most stringent level of control is determined and similarly evaluated. This process continues until a control level is arrived at which cannot be eliminated for any technical, environmental, or economic reason. A technically feasible control strategy is one that has been demonstrated to function efficiently on identical or similar processes.

Williams Olefins, LLC requests a permit modification to implement the Geismar Ethylene Plant Expansion Project which will increase annual ethylene production from 1.40 to 1.95 billion pounds. Greenhouse gas (GHG) (including CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O) emissions from the proposed project will increase more than the PSD significance level. A netting analysis is required. Creditable emissions reductions within the contemporaneous period do not provide enough credits to net GHGs out of PSD review. PSD review, including BACT, is required for GHG emissions from the proposed project.

#### **BACT for CO<sub>2</sub>**

CO<sub>2</sub> emissions can be controlled by utilizing 1) inherently low-emitting processes, practices, or designs; and/or 2) add-on control technologies.

An inherently low-emitting process is one that maximizes product yield and thermal efficiency while minimizing pollutant emissions. This is typically achieved by utilizing state-of-the-art equipment design that converts as much feedstock as possible to product, recovers as much energy as possible, minimizes fuel and energy use, or uses clean fuels. For CO<sub>2</sub>, clean fuels are "low carbon" fuels or those that combust most efficiently, thereby emitting fewer CO<sub>2</sub> per unit of heat input.

To control CO<sub>2</sub> emissions from the Geismar Ethylene Plant Expansion Project, the inherently low-emitting processes, practices, or designs will include 1) selection of low-emitting feedstocks, 2) energy efficient equipment and process design improvements, and 3) use of lower-emitting and lower-carbon fuel.

The only potential add-on control technology for removing CO<sub>2</sub> from a gas stream is typically referred as "carbon capture and sequestration" (CCS), which consists of three stages: 1) removing or segregating CO<sub>2</sub> from the gas stream, 2) compressing and transporting the CO<sub>2</sub> to a storage facility, and 3) storing the CO<sub>2</sub> on a permanent or long-term basis.

CCS is a developing technology that has not been demonstrated in practice on full scale operations in a long term application such as would be required by BACT. CO<sub>2</sub> from the process could *theoretically* be captured by scrubbing the exhaust stream with solvents (e.g., amines, ammonia). However, separating CO<sub>2</sub> from this flue gas is challenging for the following reasons:

- trace impurities (particulate matter, sulfur oxides, nitrogen oxides, etc.) can degrade the CO<sub>2</sub> capture materials; and

## PRELIMINARY DETERMINATION SUMMARY

### GEISMAR ETHYLENE PLANT EXPANSION PROJECT

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- compressing captured CO<sub>2</sub> from near atmospheric pressure to pipeline pressure (about 2000 pounds per square inch absolute) requires a large auxiliary power load.<sup>1</sup>

EPA has also indentified "a low purity CO<sub>2</sub> stream" as a "significant and overwhelming technical" issue.<sup>2</sup>

According to the "Report of the Interagency Task Force on Carbon Capture and Storage," the U.S. Department of Energy (DOE) is pursuing three post-combustion CO<sub>2</sub> capture demonstration projects using currently available technologies; however, these projects are targeting pulverized coal-fired boilers (where the flue gas has a higher concentration of CO<sub>2</sub> by volume – 13 to 15 percent). In addition, the first is not scheduled to commence until 2014.<sup>3</sup>

There are no known installations where the post-combustion capture of CO<sub>2</sub> has been installed and operated successfully on olefins cracking heaters in the United States. According to EPA, an "applicant is generally not required to undergo extensive delays and expense to research and test unproven technologies as part of the BACT process." Further, the agency has held that "technologies in the pilot scale testing stages of development would not be considered available for BACT review."<sup>4</sup> Therefore, LDEQ finds CO<sub>2</sub> capture to be technically infeasible.

The proposed project will be the expansion of the existing Geismar Ethylene Plant. There is no viable carbon dioxide storage (sequestration) in the area, such as enhanced oil recovery (EOR), saline aquifers, or any un-mined coal seams. Therefore, the CCS option is technically infeasible.

The remaining control options are 1) selection of low-emitting feedstocks, 2) energy efficient equipment and process design improvements, and 3) use of lower-emitting and lower-carbon fuel. LDEQ has determined these options are BACT for GHG emissions from the proposed project. The proposed BACT is detailed as follows:

#### Low-Emitting Feedstocks

Ethylene can be produced by cracking ethane/propane or naphtha/gasoil. The specific energy consumption (the energy required per quantity of product) when using naphtha as a feedstock is approximately 50 percent higher than when using ethane as a feedstock, and CO<sub>2</sub> emissions per ton of product are approximately 70 percent higher when using

<sup>1</sup> "Report of the Interagency Task Force on Carbon Capture and Storage," August 2010, pp. 29-30. This document is available at <http://www.epa.gov/climatechange/downloads/CCS-Task-Force-Report-2010.pdf>.

<sup>2</sup> "PSD and Title V Permitting Guidance for Greenhouse Gases," March 2011, pg. 36. This document is available at <http://www.epa.gov/nsr/ghgpermitting.html>.

<sup>3</sup> "Report of the Interagency Task Force on Carbon Capture and Storage," pp. A-19-A-20

<sup>4</sup> Draft New Source Review Workshop Manual, October 1990, pg. B.18

## **PRELIMINARY DETERMINATION SUMMARY**

### **GEISMAR ETHYLENE PLANT EXPANSION PROJECT**

**AGENCY INTEREST NO. 5565**

**WILLIAMS OLEFINS, LLC**

**GEISMAR, ASCENSION PARISH, LOUISIANA**

**PSD-LA-759, JANUARY 13, 2012**

naphtha. Additionally, the methane yield when using ethane as a feedstock is approximately a third of that of naphtha, while the hydrogen yield is four time greater.<sup>5</sup>

Both methane and hydrogen have the potential for use as a fuel gas, and ethylene production plants typically utilize the methane off-gas to fuel the cracking heaters. As hydrogen is a "zero carbon" fuel, a greater proportion of hydrogen in combustion fuel gas results in less carbon-intensive process heating.

Williams Olefins proposes to construct and operate two ethylene cracking heaters to convert ethane/propane to ethylene. This feedstock selection is equivalent to avoiding an additional 124,425 tons/year of CO<sub>2</sub>e, as compared to the CO<sub>2</sub>e increases that would result from the use of naphtha feedstock.<sup>6</sup> Using ethane/propane as feedstock is determined as part of BACT for CO<sub>2</sub> emissions from the Geismar Ethylene Plant Expansion Project.

#### **Energy Efficient Equipment and Process Design**

The proposed cracking heaters will be designed to have a thermal efficiency of 92.5%, compared to the existing heaters of 89.1 to 89.6%. The radiant efficiency of the proposed heaters will be 43.7% compared to the existing heaters of 41.3 to 41.8%. The proposed heaters also have a higher ethylene yield on a feedstock weight percent basis as compared to the existing heaters.

Williams Olefins will utilize an electric-driven booster compressor to increase ethylene yield from both existing and proposed heaters. The existing flare of the plant will also be replaced. The proposed flare will not have either air- or steam-assist and will employ a scalable design, whereby the number of burners lit and the corresponding heat input can be controlled to match the quantity of waste gas to be flared. The flare will be semi-enclosed such that there will be no visible flame, and the multiple flames will be protected from exposure to wind.

The above described efficient equipment/process designs will minimize fuel input and feedstock, therefore minimizing the CO<sub>2</sub> emissions. These are determined as part of BACT for CO<sub>2</sub> emissions from the Geismar Ethylene Plant Expansion Project.

#### **Lower Emitting and Lower-Carbon Fuels**

Off-gas produced from the cracking heaters that used ethane/propane as a feedstock will have a high concentration of hydrogen. To minimize CO<sub>2</sub> emissions, Williams Olefins will use this off-gas stream as fuel. By combusting fuel gas with 25 volume percent of

<sup>5</sup> Ren, Tao; Patel, Martin; and Blok, Kornelis, *Energy Efficiency and Innovative Emerging Technologies for Olefin Production*, Department of Science, Technology and Society, Faculty of Chemistry, Utrecht University, The Netherlands, 2004.

<sup>6</sup> Based on 0.5 lbs of CO<sub>2</sub>e/lb of ethylene production from ethane/propane (90/10) feedstock and 0.85 lbs of CO<sub>2</sub>e/lb of ethylene production from naphtha feedstock.

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**PSD-LA-759, JANUARY 13, 2012**

hydrogen in the plant heaters, approximately 106,044 tons of CO<sub>2</sub> emissions will be avoided per year. Using the heater off-gas with minimum 25 volume % of hydrogen (annual average) is determined as part of BACT for CO<sub>2</sub> emissions from the Geismar Ethylene Plant Expansion Project.

#### **BACT for CH<sub>4</sub> and N<sub>2</sub>O**

The total projected GHG emissions will consist of less than 0.1% of CH<sub>4</sub> and N<sub>2</sub>O. Therefore, an add-on control for CH<sub>4</sub> and N<sub>2</sub>O emissions will not have significant effects on the total GHG emissions. No additional control is determined as BACT for CH<sub>4</sub> and N<sub>2</sub>O emissions from the Geismar Ethylene Plant Expansion Project.

#### **B. ANALYSIS OF EXISTING AIR QUALITY**

Prevention of Significant Deterioration (PSD) regulations require an analysis of existing air quality for those pollutants emitted in significant amounts from a proposed modification. GHG is the pollutant of interest for this project. There are no National Ambient Air Quality Standard (NAAQS) or PSD increments established for GHG. Therefore, the air quality impact analysis, including screening modeling, a PSD increment analysis, and refined modeling do not apply.

#### **C. NATIONAL AMBIENT AIR QUALITY STANDARDS (NAAQS) ANALYSIS**

GHG is the pollutant of interest for this project. There are no National Ambient Air Quality Standard (NAAQS) established for GHG. Therefore, the air quality impact analysis, including refined modeling, does not apply.

#### **D. PSD INCREMENT ANALYSIS**

GHG is the pollutant of interest for this project. There are no PSD increments established for GHG. Therefore, the air quality impact analysis, including PSD increment analysis, does not apply.

#### **E. SOURCE RELATED GROWTH IMPACTS**

The project will not result in any significant secondary growth effects.

#### **F. SOILS, VEGETATION, AND VISIBILITY IMPACTS**

There will be no significant impact on soils, vegetation, and visibility.

#### **G. CLASS I AREA IMPACTS**

Breton National Wildlife Area, the nearest Class I area, is more than 100 kilometers from the site, precluding any significant impact.

**PRELIMINARY DETERMINATION SUMMARY**  
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**PSD-LA-759, JANUARY 13, 2012**

**H. TOXIC IMPACT**

The Geismar Ethylene Plant is a minor source of toxic air pollutants (TAP) and will remain a minor source of TAP after implementation of the project.

**V. CONCLUSION**

The Louisiana Department of Environmental Quality, Office of Environmental Services, has made a preliminary determination to approve the PSD permit (PSD-LA-759) for the Geismar Ethylene Plant Expansion Project at Geismar, Ascension Parish, Louisiana, subject to the attached specific and general conditions listed in LAC 33:III.537. In the event of a discrepancy in the provisions found in the application and those in this Preliminary Determination Summary, the Preliminary Determination Summary shall prevail.

## **SPECIFIC CONDITIONS**

**GEISMAR ETHYLENE PLANT EXPANSION PROJECT  
AGENCY INTEREST NO. 5565  
WILLIAMS OLEFINS, LLC  
GEISMAR, ASCENSION PARISH, LOUISIANA  
PSD-LA-759**

1. The permittee is authorized to operate in conformity with the specifications submitted to the Louisiana Department of Environmental Quality (LDEQ) as analyzed in LDEQ's document entitled "Preliminary Determination Summary" dated January 13, 2012, and subject to the BACT determinations and emission limitations listed in the following conditions. Specifications submitted are contained in the application dated December 12, 2011.
2. Williams Olefins shall utilize 1) low-emitting feedstocks (ethane/propane); 2) energy efficient equipment (cracking heaters EQT0062 and EQT0063); 3) process design improvements (electric-driven booster compressor and replaced flare); and 4) lower-emitting and lower-carbon fuel (cracking heater off-gas with minimum of 25 volume percent of hydrogen, on an annual average basis, as fuel for EQT0062 and EQT0063) as BACT for GHG emissions from the Geismar Ethylene Plant Expansion Project. [LAC 33:III.509]
3. To ensure compliance with the 25% hydrogen requirement, permittee shall monitor and record fuels, and their hydrogen content, fed to Heater 95 and Heater 96 (EQT0062 and EQT0063). [LAC 33:III.509]
4. Permittee shall comply with the Louisiana General Conditions as set forth in LAC 33:III.537 [LAC 33:III.537].